

WHAT IS CLAIMED IS:

1. A mixer device comprising:
an amplifier circuit including:
a first amplifier whose input-to-output
5 characteristic indicates a hyperbolic tangent function
characteristic;
a second amplifier whose input-to-output
characteristics indicates an exponential characteristic,
the second amplifier being connected in parallel to the
10 first amplifier; and
input and output terminals which are common to the
first amplifier and the second amplifier; and
a bias controller configured to control a bias of at
least one of the first and second amplifiers; and
15 an additional differential amplifier connected
between a node of the first amplifier and the second
amplifier and the output terminal.
2. A mixer device comprising:
an amplifier circuit including:
20 a differential amplifier whose input-to-output
characteristic indicates a hyperbolic tangent function
characteristic and which is configured by a differential
pair of transistors connected to a variable current
source;
25 a common emitter amplifier whose input-to-output
characteristic indicates an exponential characteristic

and which is connected in parallel to the differential amplifier and is configured by a pair of common-emitter configuration transistors;

input and output terminals which are common to the
5 differential amplifier and the common emitter amplifier,
an input signal being input to the input terminals and an
output signal output from the output terminals; and

a bias controller configured to control a bias of at
least one of the differential amplifier and the common
10 emitter amplifier; and

an additional differential amplifier connected
between a node of the differential amplifier and the
common emitter amplifier and the output terminal.

3. A mixer device comprising:

15 an amplifier circuit including:

a differential amplifier whose input-to-output
characteristic indicates a hyperbolic tangent
function characteristic and which is configured by a
differential pair of transistors whose emitters are
20 connected to a variable current source;

a common emitter amplifier whose input-to-
output characteristic indicates an exponential
characteristic and which is connected in parallel to
the differential amplifier and is configured by a
25 pair of common-emitter configuration transistors

whose emitters are grounded through a variable
voltage source;

input and output terminals which are common to
the differential amplifier and the common emitter
5 amplifier, an input signal being input to the input
terminals and an output signal from the output
terminals; and

a bias controller configured to control a bias
of at least one of the differential amplifier and
10 the common emitter amplifier; and

an additional differential amplifier connected
between a node of the differential amplifier and the
common emitter amplifier and the output terminal.